

WHAT IS CLAIMED IS:

1. A method for manufacturing a liquid injecting head, in which liquid flow paths are defined by combining an element substrate having a plurality of
- 5 discharge energy generating elements for applying discharge energy to liquid with a nozzle member having a plurality of liquid discharge nozzle grooves, comprising the steps of:
- preparing at least one material common to said
- 10 element substrate as a base material of said nozzle member;
- forming etching mask layers on a first surface of the base material of said nozzle member in which said nozzle grooves are formed and a second surface opposite
- 15 to said first surface;
- forming a recessed portion in said second surface of the base material by patterning said mask layer on said second surface of the base material and by effecting etching via said mask layer of said second
- 20 surface; and
- forming said nozzle grooves in the base material and for communicating said recessed portion with said nozzle grooves by patterning said mask layer on said first surface of the base material and by effecting
- 25 etching via said mask layer of said first surface and said mask layer of said second surface.

100355-102101

2. A method according to claim 1, wherein an etching amount  $t$  of etching for forming said recessed portion satisfies a relationship  $t_w > t > t_w - t_n$  when it is assumed that a thickness of said nozzle member is  $t_w$  and a depth of said nozzle groove is  $t_n$ .

3. A method according to claim 1, wherein said nozzle member is a silicon substrate formed to have a surface of  $\langle 110 \rangle$  crystal face orientation, and etching for the base material of said nozzle member is anisotropical etching directing perpendicular to a surface of the base material.

4. A method according to claim 3, wherein said mask layer is constituted by a silicon dioxide film.

5. A method for manufacturing a liquid injecting head, in which liquid flow paths are defined by combining an element substrate having a plurality of discharge energy generating elements for applying discharge energy to liquid with a nozzle member having a plurality of liquid discharge nozzle grooves and a liquid chamber communicated with said nozzle grooves, comprising the steps of:

preparing at least one material common to said element substrate as a base material of said nozzle member;

forming etching mask layers on a first surface of the base material of said nozzle member in which said nozzle grooves are formed and a second surface opposite to said first surface;

5           forming a recessed portion in said second surface of the base material by patterning said mask layer on said second surface of the base material and by effecting etching via said mask layer of said second surface; and

10           forming said nozzle grooves and said liquid chamber in the base material and for communicating said recessed portion with said liquid chamber by patterning said mask layer on said first surface of the base material and by effecting etching via said mask layer  
15 of said first surface and said mask layer of said second surface.

6. A method according to claim 5, wherein an etching amount  $t$  of etching for forming said recessed  
20 portion satisfies a relationship  $t_w > t > t_w - 2 \times t_n$  when it is assumed that a thickness of said nozzle member is  $t_w$  and a depth of said nozzle groove is  $t_n$ .

7. A method according to claim 5, wherein said  
25 nozzle member is a silicon substrate formed to have a surface of  $\langle 110 \rangle$  crystal face orientation, and etching for the base material of said nozzle member is

anisotropic etching directing perpendicular to a surface of the base material.

8. A method according to claim 7, wherein said  
5 mask layer is constituted by a silicon dioxide film.